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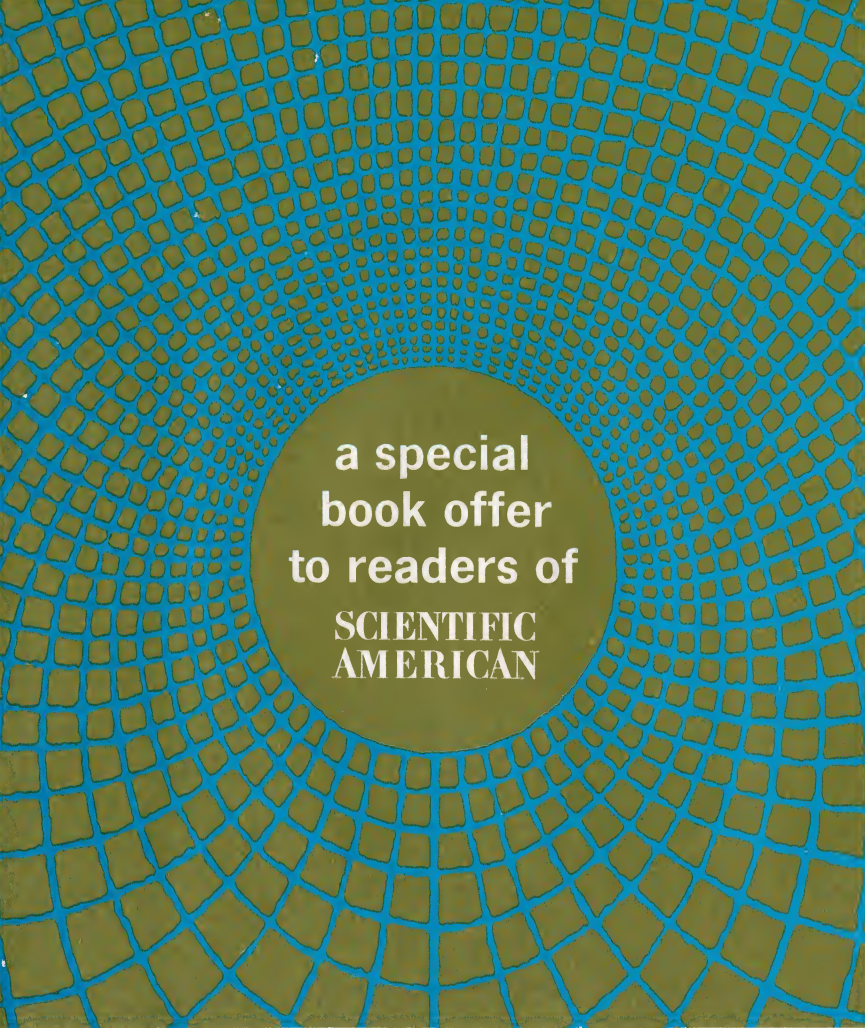
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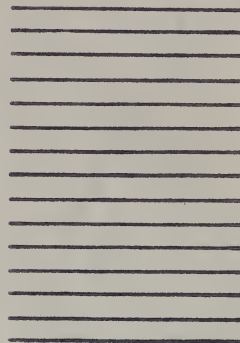
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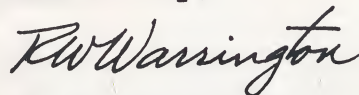
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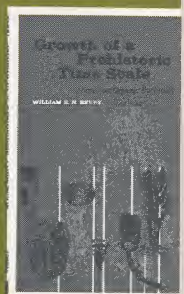
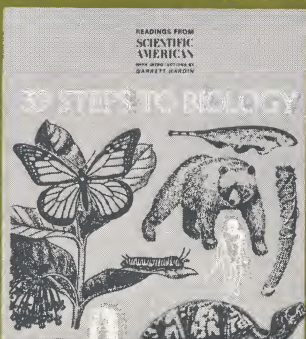
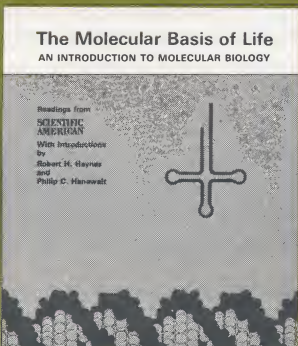
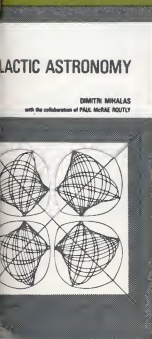
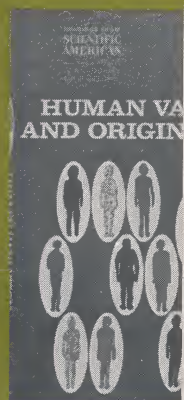
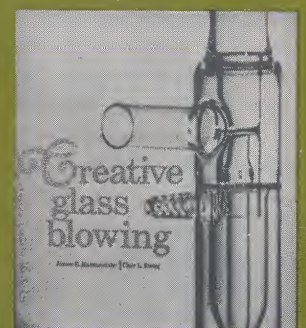
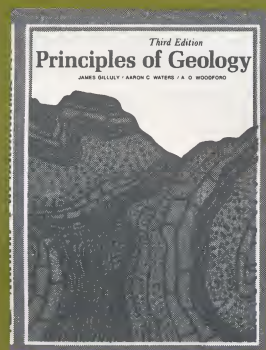
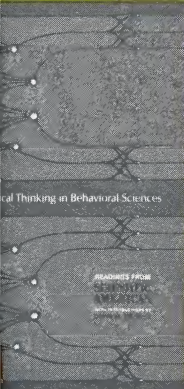
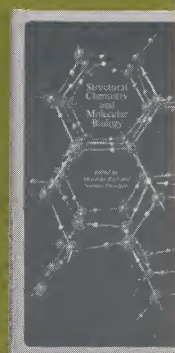
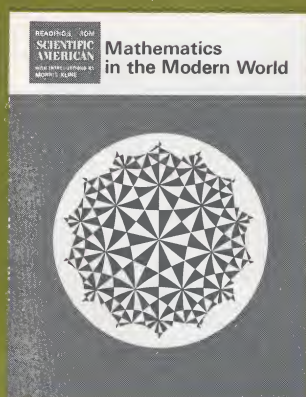
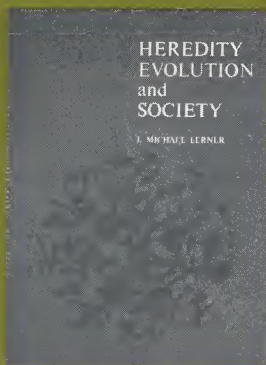
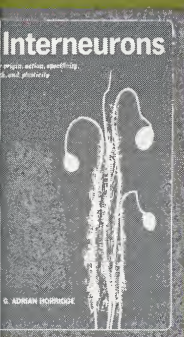
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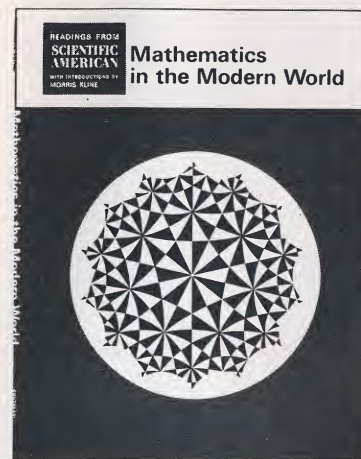
Mathematics in the Modern World

READINGS FROM **SCIENTIFIC
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With Introductions by MORRIS KLINE, New York University

1968, 409 pages, 373 illustrations (155 in color), (68-17151), \$10.00

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(also available paperbound \$6.50)



Selected to provide insight into the essential simplicity and astonishing practical effectiveness of mathematics, this collection of fifty readings by authorities in the field includes ten of the eleven articles from the single-topic issue of September 1964 devoted to Mathematics in the Modern World.

This book will be particularly interesting to readers who want to acquire some orientation in and appreciation for the scope of mathematics and its applications.

"... To acquire a sound understanding and appreciation of mathematics, one should penetrate to the underlying ideas stripped of sophisticated and pettifogging details; one should learn its objectives and uses, the motivations of the men who created it, and the genesis of its present concepts and structure.

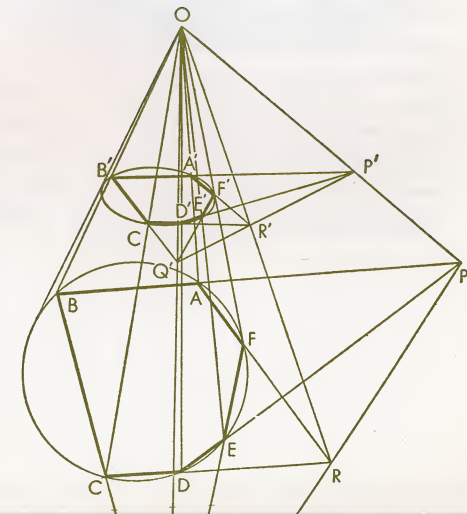
"The articles in this volume contribute substantially to the understanding of mathematics. Their purpose is not to present bread-and-butter information or the technical details that one must master in one course to be ready for the next one, but to give insight. They transcend blocks and cement to portray large temples; they complement the close examination of minute details with broad vistas: and to the day-by-day struggles with symbols and processes they impart the excitement of noble schemes.

"A series of articles by different authors on many different subjects is not the substitute for systematic study and technical mastery, but rather a kaleidoscope, whose varicolored, bright flashes of light may illuminate, excite, and inspire—and this is the primary objective of all education."

—From the Preface

CONTENTS THE NATURE OF MATHEMATICS: Introduction. *Halmos*, Innovation in Mathematics. *Poincaré*, Mathematical Creation. *Courant*, Mathematics in the Modern World. BIOGRAPHY: Introduction. *Crombie*, Descartes. *Cohen*, Isaac Newton. *Newman*, Laplace. *Whittaker*, William Rowan Hamilton. *Morrison and Morrison*, The Strange Life of Charles Babbage. *Newman*, William Kingdon Clifford. *Newman*, James Clerk Maxwell. *Newman*, Srinivasa Ramanujan. *Halmos*, "Nicolas Bourbaki." SOME CHAPTERS OF MATHEMATICS: Introduction. *Davis*, Number. *Herwitz*, The Theory of Numbers. *Sawyer*, Algebra. *Kline*, Geometry. *Kline*, Projective Geometry. *Le Corbeiller*, The Curvature of Space. *Tucker and Bailey*, Topology. *Euler*, The Koenigsberg Bridges. *Shinbrot*, Fixed-Point Theorems. *Ayer*, Chance. *Weaver*, Probability. *Kac*, Probability. *Weaver*, Statistics. THE FOUNDATIONS OF MATHEMATICS: Introduction. *Hahn*, Geometry and Intuition. *Quine*, The Foundations of Mathematics. *Quine*, Paradox. *Pfeiffer*, Symbolic Logic. *Cohen and Hersh*, Non-Cantorian Set Theory. *Nagel and Newman*, Gödel's Proof. THE IMPORT OF MATHEMATICS: Introduction. *Dirac*, The Evolution

of the Physicist's Picture of Nature. *Dyson*, Mathematics in the Physical Sciences. *Einstein*, On the Generalized Theory of Gravitation. *Gamow*, Gravity. *Moore*, Mathematics in the Biological Sciences. *Stone*, Mathematics in the Social Sciences. *Dalton*, The Practice of Quality Control. *Morgenstern*, The Theory of Games. *Rapoport*, The Use and Misuse of Game Theory. *Weaver*, The Mathematics of Communication. *Cooper and Charnes*, Linear Programming. *Levinson and Brown*, Operations Research. *Davis*, Mathematical Machines. *Ulam*, Computers. *Evans*, Computer Logic and Memory. *Oettinger*, The Uses of Computers in Science. *Strachey*, System Analysis and Programming. *Wiener*, Cybernetics. *Kemeny*, Man Viewed as a Machine. Biographical Notes and Bibliographies.



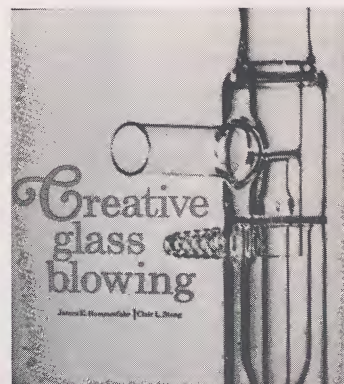
Creative Glass Blowing

JAMES E. HAMMESFAHR and CLAIR L. STONG

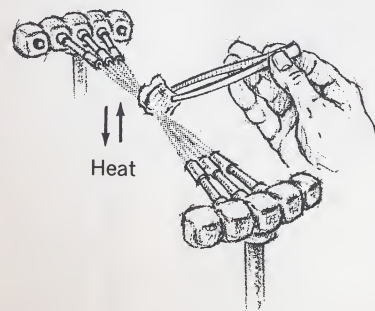
Foreword by Charles H. Greene, College of Ceramics at Alfred University

1968, 196 pages, 147 illustrations (9 plates in full color), (68-14225), \$8.00

SPECIAL PRICE \$6.40



CONTENTS Glass: Its Origins, Uses, and Nature. The Tools of the Glass Blower. Solid Glass: Basic Operations. Glass Tubing: Basic Operations. Novelty Glass Work. Scientific Glassware. Sources of Tools and Materials. Bibliography.



Here is the first comprehensive and detailed introduction to the practice of glass blowing, written by a descendant of a long line of professional glass blowers in collaboration with an experienced science writer. In clear, concise language the authors explain, step by step, how to perform the basic operations of glass blowing, from rounding a sharp edge and joining glass parts to blowing bulbs. Throughout the book, exercises provide practice in applying the basic operations in selected combinations to make complex structures. Nearly 150 illustrations, comprising line drawings, photographs, and nine full-color plates, help the reader visualize the procedures and the finished products of glass blowing.

The book will serve as an introduction for the layman to an engrossing and satisfying hobby and as a guide for the scientist or science student who needs to improvise or repair equipment.

"This book fills an important need. I would have found it invaluable in my own graduate work in chemistry. It describes and explains many techniques that I learned the hard way, by sad experience. In addition, it contains some previously unpublished hints and suggestions that we have tried in our laboratory practice and found useful. I think the book will be essential for any graduate students of chemistry and physics."

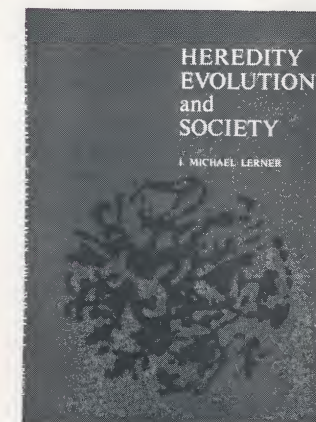
—from the Foreword

Heredity, Evolution, and Society

I. MICHAEL LERNER, University of California, Berkeley

1968, 307 pages, 86 illustrations, (68-25409), \$8.00

SPECIAL PRICE \$6.40



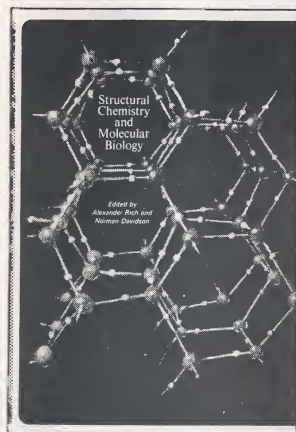
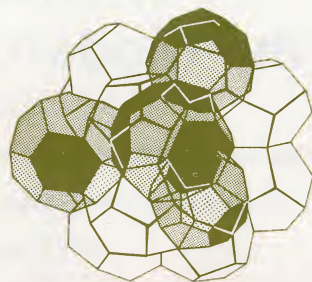
An understanding of genetics and evolutionary thought—and their implications for human society—should be part of the cultural equipment of every college and university graduate today. This book will provide students and other readers with a scientific background for the momentous questions relating to these subjects that now confront all of us.

Covering an array of topics never before brought together in a single book, the author emphasizes the social, political, and psychological ramifications of the biological laws governing heredity and organic evolution.

Professor Lerner first sketches in broad strokes the vast panorama of life on this planet, particularly as it is understood in terms of Darwinian thought. He then discusses the newly discovered transmission mechanism of genetics and the formal mechanics of heredity as established by Mendel and extended by many others since. Next he considers the genetics of populations and the ways in which evolutionary forces, including man-made sources of genetic variation, act upon them. Human inheritance is then taken up, with particular attention given to genetic problems of race and to the consequences of various human mating systems. The final part of the book is concerned with the social issues raised by the science of

genetics, including the impending prospect of manipulation of human genetic resources.

CONTENTS Introductory. Life. Darwinism. The Evolutionary Record. Man. Information Machinery of the Cell. Biological Communication Between Generations. Sex. Gene Interaction. Polygenic Inheritance. Nature and Nurture. Population Genetics. Selection. Mutation. Artificial Mutagenesis. Human Diversity. Formal Genetics of Man. Immunogenetics. Mating Systems in Man. Management of the Human Gene Pool. Genetics and Politics. Envoi. Additional Reading. Credits.



"... A whopping dose of marvelous technical material—real contributions to chemical and biological theory.

"There are sixty articles on such subjects as the structure and chemistry of proteins, nucleic acid chemistry, hydrogen bonding in water and, finally as good a summary (in seven papers) of the present status of quantum chemistry and chemical theory as can be found anywhere."

—*Scientific Research*, May 13, 1968

Intended as an expression of admiration for the scope and influence of the scientific work of Linus Pauling, this volume of essays covers an extensive range of topics generally related to structural chemistry and molecular biology, two areas of research that have been transformed by contributions made by Pauling.

"An impressive collection of research articles on related topics in molecular structure, the nature of the chemical bond, and molecular biology"

—*New Technical Books*, April 1968

"The book is as immensely interesting as the man, testifying to the breadth and depth of his impact on vast areas of chemistry, biology, and medicine. Many of the papers are highly sophisticated and speculative; quite a few are review articles; some of the best are retrospective essays; a scattering are purely technical reports. ... Young research students of chemistry, biology, and medicine may well consider this as a bible, not because of its doctrines and dogmata but for its wealth of diversity of content and comment"

—Max Delbrück, in *Engineering and Science*, June 1968

Structural Chemistry and Molecular Biology

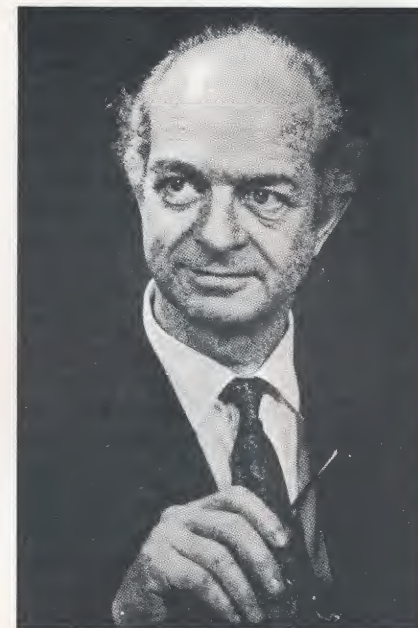
A VOLUME DEDICATED TO LINUS PAULING
BY HIS STUDENTS, COLLEAGUES, AND FRIENDS

Edited by ALEXANDER RICH, Massachusetts Institute of Technology,
and NORMAN DAVIDSON, California Institute of Technology

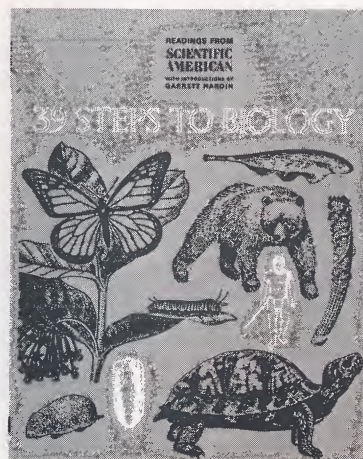
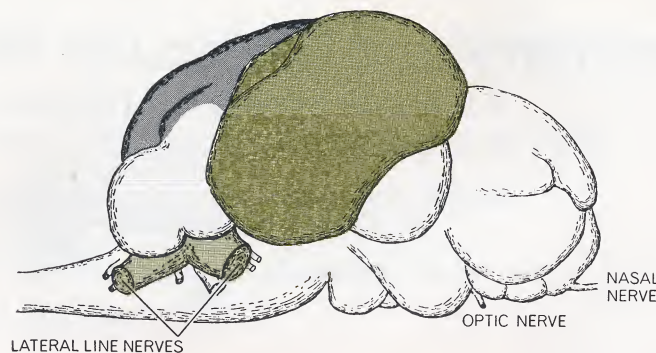
1968, 907 pages, 280 illustrations, 3 portraits, 83 tables, (67-21127), \$10.00

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CONTRIBUTORS: J. H. Sturdivant, Dorothy Crowfoot Hodgkin, Dennis Parker Riley, G. Kartha, J. Bello, D. Harker, William N. Lipscomb, Richard H. Stanford, Jr., Robert B. Corey, Joseph Kraut, Gerald Strahs, Stephan T. Freer, Giovanni Giacometti, G. N. Ramachandran, John T. Edsall, Sidney A. Bernhard, Gian Luigi Rossi, Carole L. Hamilton, Harden M. McConnell, David Pressman, Allan Grossberg, Dan H. Campbell, S. J. Singer, Russell F. Doolittle, John C. Kendrew, G. Adam, M. Delbrück, Arthur B. Pardee, Alexander Rich, W. A. Schroeder, W. R. Holmquist, Emile Zuckerkandl, Harvey A. Itano, Alfred G. Knudson, Jr., Ray D. Owen, Thomas L. Perry, Richard T. Jones, Robert D. Koler, Arthur Cherkin, J. F. Catchpool, Ludvik Bass, Walter J. Moore, J. D. Bernal, Crellin Pauling, Herbert Jehle, William C. Parke, James Bonner, Dorothy Y. H. Tuan, David R. Davies, Gary Felsenfeld, Norman Davidson, James C. Wang, Jerry Donohue, Walter C. Hamilton, Richard E. Marsh, D. P. Stevenson, Barclay Kamb, Ruth Hubbard, George Wald, Peter Pauling, Hans Kuhn, J. L. Hoard, J. D. Dunitz, P. Strickler, John D. Roberts, Edward W. Hughes, James A. Ibers, Otto Bastiansen, S. H. Bauer, Kinya Katada, Katsumi Kimura, Herman Branson, Jürg Waser, Sten Samson, David P. Shoemaker, Clara Brink Shoemaker,



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Much emphasis is placed today on the recent triumphs of molecular biology in revealing important unities in the living world. This collection of thirty-nine readings, on the other hand, is intended to lead the reader into some of the more unsettled—indeed, mysterious—areas of biology that can be seen by returning to a direct study of the diversities and unities of nature. Topics covered include some surprising adaptations that cannot be easily explained in terms of natural selection, some apparent contradictions between requirements for survival and social reactions, population growth, and such man-centered problems as air pollution, the effects of smoking and the possibility of human self-extinction. In his introductions, Professor Hardin puts the readings into perspective and provides insight into their significance. Each article is reproduced as it appeared originally in *SCIENTIFIC AMERICAN*, with full text, full illustration, and full color.

"A wonderful book by a thoughtful and erudite editor. His choices are sensitive and wise."

—Daniel McKinley, State University of New York, Albany

39 Steps to Biology

READINGS FROM **SCIENTIFIC AMERICAN**

With Introductions by GARRETT HARDIN, University of California, Santa Barbara

1968, 344 pages, 329 illustrations (154 in color), (68-21673), \$10.00

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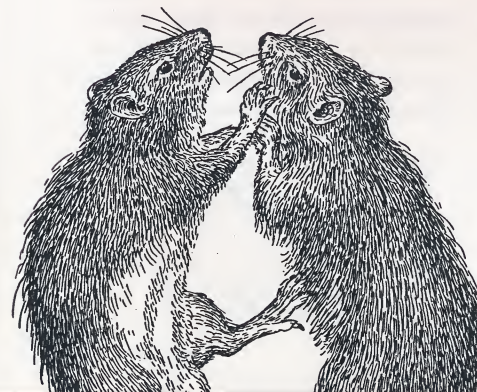
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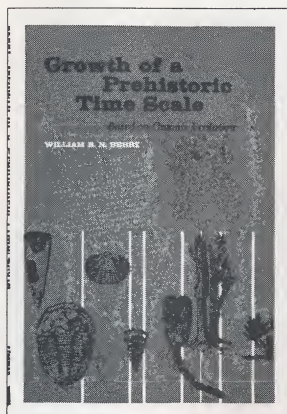
Growth of a Prehistoric Time Scale

BASED ON ORGANIC EVOLUTION

WILLIAM B. N. BERRY, University of California, Berkeley

1968, 158 pages, 16 illustrations, (68-14224), \$5.75

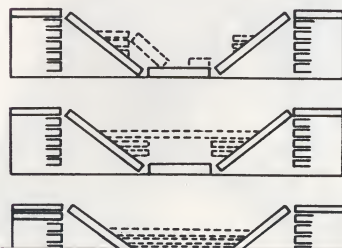
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CONTENTS A Need for a Time Scale. First Principles. Attempts at Division. Darwin's Contribution—Organic Evolution through Natural Selection. A Maelstrom of Opinions. Growth and Development of the Periods. Lyell's Percentages. An Overview of the Earth's Fossil Record. Units with Boundaries. Marker Points and the Correlation Web. Literature Cited.

This readable history recounts the development of the prehistoric time scale, which is based primarily upon the fossil record. The author begins with early accounts of scientific inquiry in ancient Greece and follows the quest for principles that led to the formation of an interpretive time scale. Although the basic units of this scale were established before Darwin, it is now known that organic evolution through natural selection is reflected in the stratigraphic sequence of fossils, and thus in the time scale itself. The author discusses recent modifications in the use of the shorter units and points out some challenging new avenues of research that have been opened up by using such units to reconstruct earth history. Stress is placed on the role that biological principles, particularly evolution, have had in the establishment and use of units in the time scale.

Because of the central position of the time scale in all geologic thinking, this book will be particularly enlightening to the general reader.

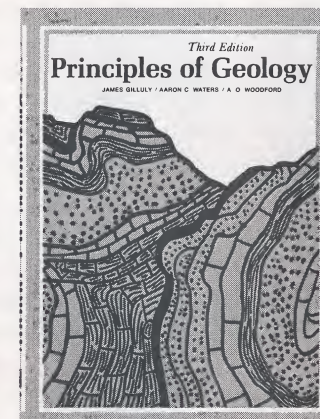


Third Edition Principles of Geology

JAMES GILLULY, formerly of the U. S. Geological Survey,
AARON C. WATERS, University of California, Santa Cruz,
and A. O. WOODFORD, Pomona College

1968, 687 pages, 520 illustrations, illustrated
in two colors, (68-14228), \$9.75

SPECIAL PRICE \$7.80

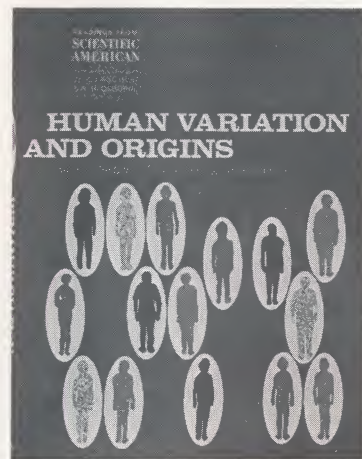
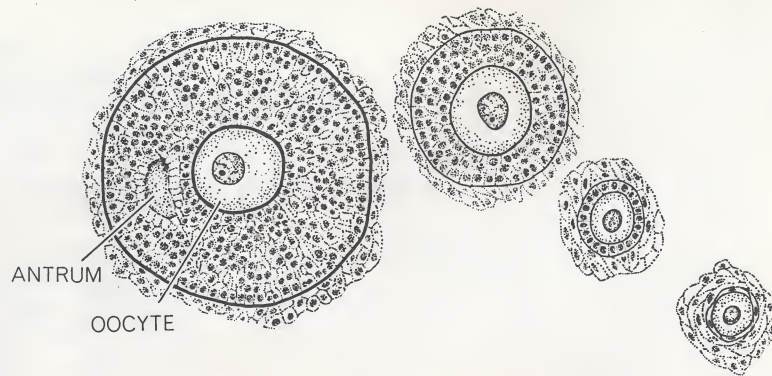


In this, one of the most influential and widely used introductions to geology, the authors give the reader an understanding of geologic concepts, processes, and principles instead of a catalogue of technical terms. Avoiding an authoritarian approach, they provide the reader with some insight into the nature and intrinsic uncertainties of geologic evidence. Nonspecialists have found this book particularly useful for furthering their geological knowledge.

For the third edition the authors have completely rewritten more than half of the book from new outlines, and have revised and updated every chapter to take account of new developments.

CONTENTS The Science, Geology. Minerals and Matter. The Record of the Rocks. Weathering and Soils. Erosion. Geologic Maps. Fossils, Strata, and Time. Movements of the Earth's Crust. Geodesy, Isostasy, and Strength. Downslope Movements of Soil and Rock. Stream Erosion and Deposition. Glaciers and Glaciation.

Ground Water. Deserts and the Work of the Wind. The Oceans. Sedimentary Rocks and the Environments of Deposition. Igneous Activity and Metamorphism. Earthquakes and the Earth's Interior. Mountains. Mineral Resources. Speculations about the Origin of the Earth and of Life. Appendixes: Maps and Mapping; Identification of Minerals; Identification of Rocks; Chemical Data; Fossils.



This collection of twenty-seven readings from *SCIENTIFIC AMERICAN*—reproduced with full text, full illustration, and full color—is a comprehensive, integrated account of the principal aspects of human variation within and between populations. Instead of concentrating on the study of fossil man, the editors emphasize the basic biology and genetics of living peoples—an approach that they feel to be at least as productive as the traditional manner of studying man and his origins. Each group of articles is preceded by an introduction in which the editors interpret and interrelate the various readings.

“Many excellent articles on various topics in human biology and evolution published in recent years have been reprinted in this volume. Needless to say, the authorship of the 27 articles is outstanding, including such specialists as Dobzhansky, Eiseley, Washburn, Waddington, Howells, and Turnbull. The articles are arranged in four sections, each introduced by a few pages of historical background and bibliographic references. . . . Anyone familiar with *SCIENTIFIC AMERICAN* is aware that the content of its articles sounds to considerable technical depth. . . . This is a very useful book for reference or for browsing.”

—*Science Books*, May 1968

Human Variation and Origins

AN INTRODUCTION TO HUMAN BIOLOGY AND EVOLUTION

READINGS FROM **SCIENTIFIC AMERICAN**

With Introductions by W. S. LAUGHLIN and R. H. OSBORNE,
University of Wisconsin

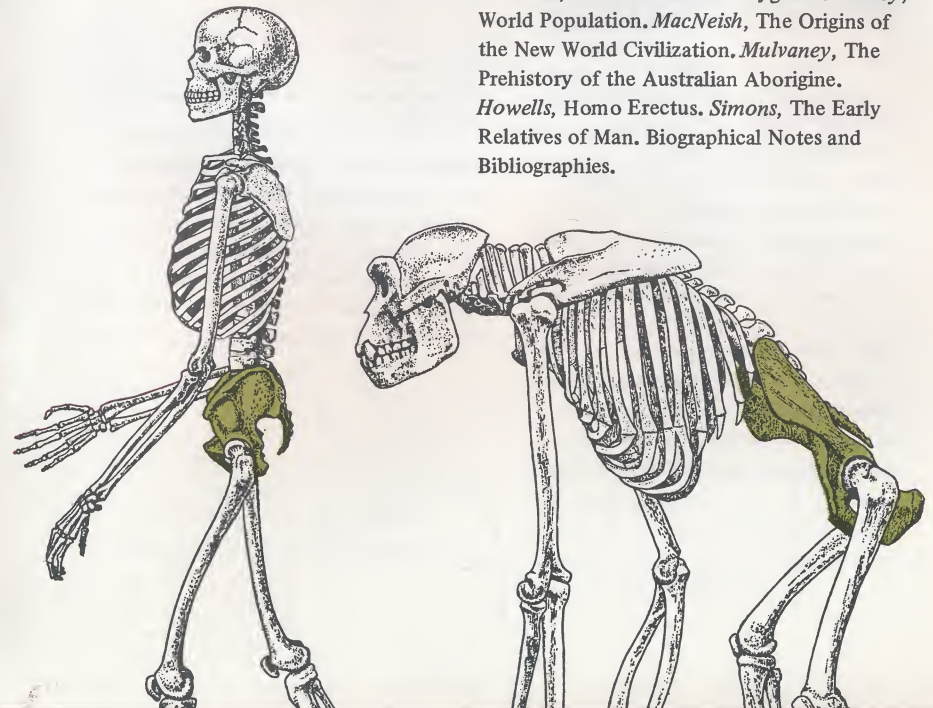
1967, 297 pages, 252 illustrations (84 in color), (67-22256), \$10.00

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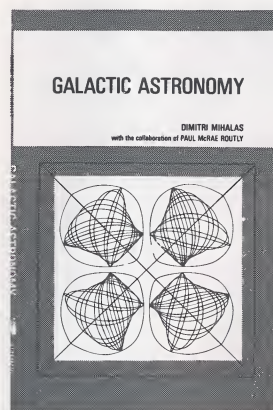


Galactic Astronomy

DIMITRI MIHALAS, Princeton University Observatory.
With the Collaboration of PAUL McRAE ROUNTLY, American Astronomical Society

1968, 257 pages, 113 illustrations, (68-16760), \$10.00

SPECIAL PRICE \$8.00

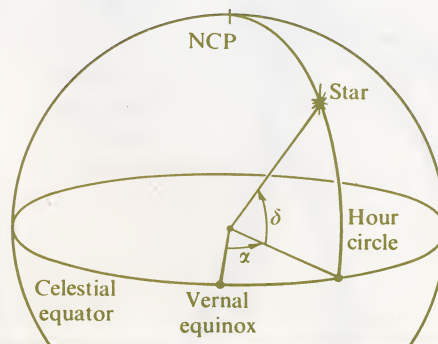


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In this book, the first of its kind in the field, the author and his collaborator synthesize the results of Galactic research into a clear, self-contained account of man's knowledge about the Milky Way System. Although necessarily mathematical in approach, the book emphasizes the physical side of the subject and treats, as nearly as possible, Galactic structure and Galactic dynamics on an equal basis. *Galactic Astronomy* is based on notes prepared by the author for an undergraduate course at Princeton University for students qualified in the physical sciences.

Stressed throughout the book is the critical role played by the fundamental observational data upon which all deductions concerning the Galaxy ultimately depend.

Features that strengthen the text and make it particularly useful as a professional reference work are a large number of illustrative diagrams and extensive tables presenting a wide variety of data, observational and otherwise, not obtainable elsewhere in a single volume.

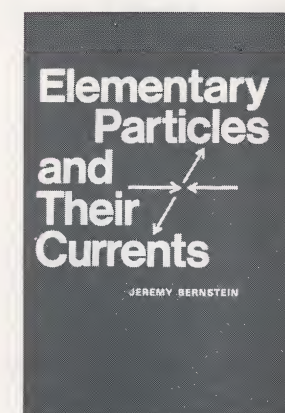


Elementary Particles and Their Currents

JEREMY BERNSTEIN, Stevens Institute of Technology

1968, 322 pages, (68-21404), \$12.00

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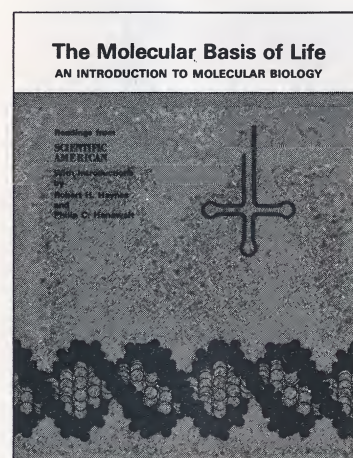
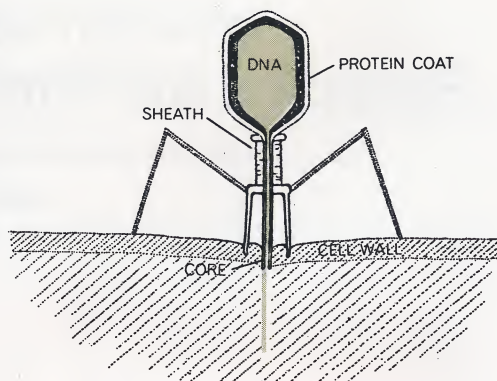
The author of this graduate-level textbook emphasizes the important role played by currents in the physics of elementary particles. Unlike most previous textbooks, which have placed heavy emphasis on the field equations for the strongly interacting fields, this book treats the theory of elementary particles in a unified way under the general theme of currents. The author bridges the gap between the foundations of the subject and the investigative frontiers by concentrating on the three most important types of currents and their interactions: the electromagnetic, the weak, and those that couple strongly to vector mesons.

He presents the concepts and their concrete applications in close proximity as they arise naturally in the exposition rather than treating them in separate sections. He assumes that readers will have some familiarity with the Dirac equation, some aspects of the Feynman graphs, and the existence of mesons and their spins and parities.

Professor Bernstein has written more than thirty articles on the theory of elementary particles and weak interactions. Formerly a Member of the Institute for Advanced Study and Brookhaven

National Laboratory, he is a recipient of the Westinghouse-A.A.A.S. Science Writing Award; he is also a writer for *The New Yorker*.

CONTENTS Introduction and Notation. Currents: a First Look. Interacting Fields. Turning On the Electromagnetic Field. Electron-Nucleon Scattering I: Form Factors. C, P, T, and CPT. Electron-Nucleon Scattering II. Dispersion Relations and Electron Scattering. The Weak Interactions I: Mostly Leptons. The Weak Interactions II: Nucleons. Weak Currents: The Vectors. The Axial Vector I. The Axial Vector II. Strange Particles: An Introduction to SU_3 . More on SU_3 . Decays that Change Strangeness.



The epochal advances in our understanding of the material basis of life made during the last twenty years are recounted in this book. The individual articles, written by some of the scientists most intimately involved in these advances, reveal the personal approaches brought by them to their work and convey the excitement of the period vividly. As in other SCIENTIFIC AMERICAN readers, each selection is reproduced as it originally appeared in SCIENTIFIC AMERICAN, with full text, full illustration, and full color.

An introductory essay and separate introductions to each of five sections provide integration as well as background and supplementary information. Anyone who wants a comprehensible up-to-date survey of molecular biology should read and own this book.

"... 'Life' is a collective word that subsumes a vast panorama of complex phenomena associated with all the organisms that exist. This carries the awesome suggestion that if we are to gain a really proper understanding of what life is, we may have to study in detail the many diverse forms in which it occurs, as well as to enquire into its origin. One is relieved of this impracticable assignment by the prospect that there are certain basic characteristics to be found in the simplest creatures and that are yet essential even for the most complex ... The simplest organisms consist of but a single cell, and even the most complex are constructed of relatively few cell types. Thus, the cell has come to be regarded as the simplest independent structure that possesses all of the essential properties of life, and if we are to understand life, we must first understand the molecular basis of cellular activities."
—From the Introductory Essay, "LIFE— and the Advent of Molecular Biology"

The Molecular Basis of Life

AN INTRODUCTION TO MOLECULAR BIOLOGY

With Introductions by ROBERT H. HAYNES, York University, Toronto, and PHILIP C. HANAWALT, Stanford University

1968, 360 pages, 360 illustrations (215 in color), (68-8633), \$10.00

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ZUCKERKANDL The Evolution of Hemoglobin

EGLINTON and CALVIN Chemical Fossils

WALD The Origin of Life

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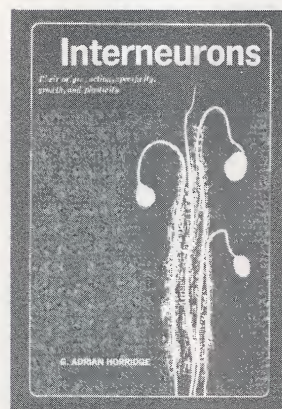
Interneurons

THEIR ORIGIN, ACTION, SPECIFICITY, GROWTH, AND PLASTICITY

G. ADRIAN HORRIDGE, University of St. Andrews, Scotland

1968, 436 pages, 178 illustrations, (68-13053), \$12.50

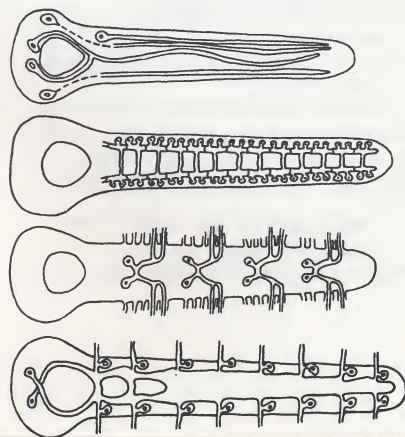
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Over the past decade researchers have found that the complex processes that govern behavior are brought about by combinations of nerve cells that are neither sensory nor motor in function. These central nerve cells act in groups and chains in particular combinations to filter all sensory excitation and to govern all coordinated activity. How they do so—to the extent that is known—is the subject of this book. The results have been amassed by the repeated sampling of nerve cell (neuron) activity by techniques that record the activity of single cells.

In this monograph in comparative, integrative neurophysiology, the author reviews the experimental findings and speculates on how far they lead to an understanding of the brain and to what extent models of brains can be tested. He also suggests the existence of reinforcement neurons, as part of a theory of learning.



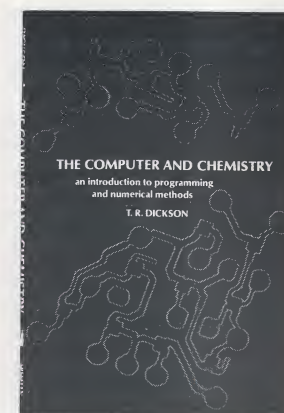
The Computer and Chemistry

AN INTRODUCTION TO PROGRAMMING AND NUMERICAL METHODS

T. R. DICKSON, Orange Coast College

1968, 216 pages, 23 illustrations, (68-16758), \$5.75

SPECIAL PRICE \$4.60



With the increased use of the digital computer in laboratory and theoretical calculations, it has become important for the chemist and the chemistry student to be able to construct and understand computer programs. This textbook, with its strong emphasis on practicality, provides a sound introduction to computer programming and numerical methods. Applications to real problems ranging from basic stoichiometric calculations to numerical approximations of definite integrals are given so that the reader will learn how to interpret computer programs as well as how to construct programs of his own.

The first part of the book presents the rules and the procedures to be followed in using the FORTRAN language, the practical, problem-oriented computer language that is most frequently used by scientists today. In the second part of the book the author introduces basic numerical methods and shows how they may be applied to many different chemical problems.

CONTENTS THE FORTRAN LANGUAGE: Introduction to Digital Computers. The FORTRAN Language. FORTRAN Control Methods. FORTRAN Subprogram Techniques. Problems for Part One. Bibliography for Part One. NUMERICAL METHODS AND COMPUTER APPLICATIONS: Program Writing. Data

Manipulations and Function Evaluation. Evaluation of Roots of Equations. Numerical Integration. Matrix Manipulations and the Solution of Simultaneous Linear Equations. Curve Fitting. Eigenvalues, Eigenvectors, and Molecular Orbital Calculations. Miscellaneous Computer Applications. Bibliography for Part Two. Appendixes: Numerical Errors and FORTRAN Errors; Monitor and Batch Processing; Subprogram Linkage with Main Programs; Comparison of FORTRAN II and FORTRAN IV.

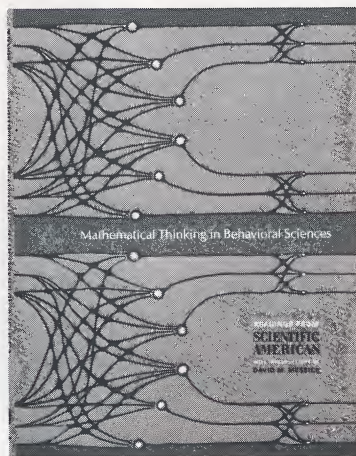
Mathematical Thinking in Behavioral Sciences

READINGS FROM **SCIENTIFIC AMERICAN**

With Introductions by DAVID M. MESSICK, University of California, Santa Barbara

1968, 231 pages, 221 illustrations (76 in color), (68-25407), \$10.00

SPECIAL PRICE \$8.00
(also available paperbound \$4.95)



During the last twenty-five years behavioral and social scientists have relied increasingly on mathematics as a tool to facilitate understanding of the phenomena they deal with.

This collection of twenty-seven readings from **SCIENTIFIC AMERICAN**, reproduced with full text, full illustration, and full color, emphasizes the two mathematical accomplishments that, more than any others, have found great success in behavioral sciences: the theory of probability and the digital computer. Some specific topics covered are feedback, the principle of optimization (the comparison of actual and ideal levels of performance so explicitly illustrated in game and decision theory), the extent to which machines are capable of performing activities typically considered unique to living systems, and the ways in which digital computers have contributed to the understanding of behavioral phenomena.

Introductions to the five sections interrelate the readings and suggest some of the ways that mathematics and contemporary technology have combined to open new possibilities for behavioral research.

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Introduction
AYER Chance
CARNAP What Is Probability?
COHEN Subjective Probability
KAC Probability
McCRACKEN The Monte Carlo Method

II. *Communication and Control*

Introduction
WIENER Cybernetics
WEAVER The Mathematics of Communication
PETERSON Error-correcting Codes
PIERCE Redundancy in Computers
TUSTIN Feedback
BELLMAN Control Theory

III. *Games and Decisions*

Introduction
MORGENSTERN The Theory of Games
HURWICZ Game Theory and Decisions
RAPOPORT The Use and Misuse of Game Theory
COOPER and CHARNES Linear Programming

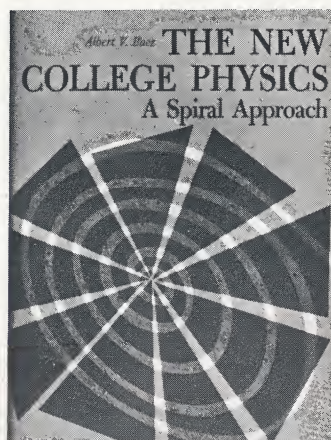
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PENROSE Self-reproducing Machines
WALTER A Machine That Learns
BERNSTEIN and ROBERTS Computer v. Chess-player
MINSKY Artificial Intelligence
SELFRIDGE and NEISSER Pattern Recognition by Machine

V. *Recent Computer Applications*

Introduction
ULAM Computers
SOKAL Numerical Taxonomy
JULESZ Texture and Visual Perception
BRAZIER The Analysis of Brain Waves
LEDLEY and RUDDLE Chromosome Analysis by Computer
SUPPES The Uses of Computers in Education
Biographical Notes and Bibliographies





The New College Physics

A SPIRAL APPROACH

ALBERT V. BAEZ

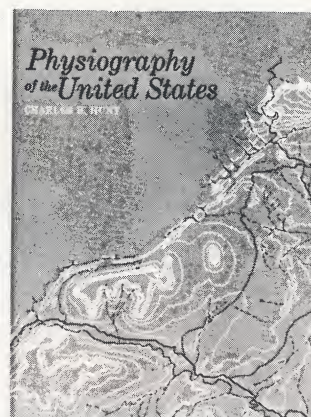
1967, 739 pages, 743 illustrations, illustrated in two colors, (67-12180), \$11.75

SPECIAL PRICE \$9.40

In this elementary introduction to general physics, the author leads the reader gradually from the classical concepts of the science through the modern ones. The approach used is first to progress quickly from one concept to another, giving specific examples for each, and then to return repeatedly to each concept at successively higher levels of difficulty. By using this "spiral" approach, Dr. Baez is able to develop systematically the many subtle implications and ramifications of basic ideas.

"A very creditable new approach . . . a valuable addition to the literature of general physics texts."

—*Science Books*, September 1967



Physiography of the United States

CHARLES B. HUNT, The Johns Hopkins University

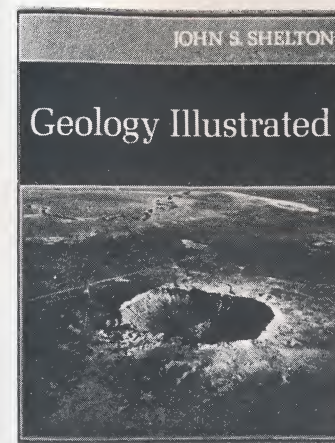
1967, 480 pages, 377 illustrations, (66-24952), \$7.50

SPECIAL PRICE \$6.00

"The book is recommended to anyone—professional, student, or layman—who wishes to become better informed about the physical environment of the United States. . ."

—Dwight R. Crandell, *American Journal of Science*, February 1968

This book is a broad but detailed look at the natural features and resources of our country, their origins, and their influences on our history. In the first part the author surveys the physical structure of the United States and develops the principles of earth science that are necessary for an understanding of physiography. (No other background in any of the natural sciences is assumed.) In the second part he applies these principles to the physiographic provinces of the United States (including Alaska, Hawaii, and Puerto Rico) and examines each of these regions in detail. Throughout the book discussions are illustrated by numerous maps and examples.



Geology Illustrated

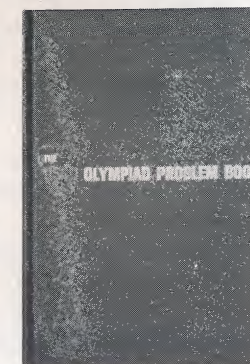
JOHN S. SHELTON, formerly at Pomona College. Drawings by Hal Shelton

1966, 434 pages, 382 illustrations, (66-16380), \$10.00

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"The proud title of this eye-filling book is justified. Four hundred photographs, mostly stunning aerial views taken by the author himself in the West, with accompanying drawings by his cartographer brother, present the basis of physical geography in the field. With a rare skill at explanation and a delicate sense of evidence, Shelton argues for the work of thrust and uplift, ice and water, and unites the processes in a dozen type localities crowned by the Grand Canyon. Here is physical geology remade as fresh as it was a century ago, into a triumph of direct observation and clear thought, not a set of conventional assertions with formal names. An outstanding book for self-study or for a college text. It is also suitable for interested readers in high school or in the home."

—*SCIENTIFIC AMERICAN*, December 1966



The USSR Olympiad Problem Book

SELECTED PROBLEMS AND THEOREMS OF ELEMENTARY MATHEMATICS

D. O. SHKLARSKY, N. N. CHENTZOV, and I. M. YAGLOM. Translated from the Russian by John Maykovich, revised and edited by Irving Sussman, University of Santa Clara

1962, 452 pages, 27 illustrations, (61-15273), \$10.00

SPECIAL PRICE \$8.00

This book contains 320 unconventional problems in algebra, arithmetic, elementary number theory, and trigonometry. Most of these problems were given in competitive examinations sponsored by the School Mathematical Society of the Moscow State University and in the Mathematical Olympiads held in Moscow. Although a background in only high school mathematics is presumed, the problems are difficult and require original thinking, often of a very high order. Complete solutions to all problems are given; in many cases alternate solutions are presented from different points of view. Hints for the solution of every problem are also provided.

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